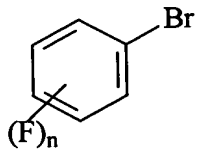
We Claim:

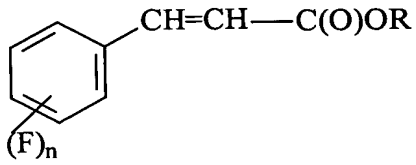
1. A process for the production of a compound comprising:
reacting a bromobenzene reactant of the formula:



with an alkyl acrylate of the formula:

CH_2=CH-C(O)OR

in the presence of a palladium catalyst for a Heck reaction, a base, and a phase-transfer catalyst, to produce an alkyl cinnamate ester compound having the formula:



wherein n is an integer of from 0 to 5, and R is an alkyl group.

2. A process according to claim 1, wherein the palladium catalyst is a substantially phosphane-free palladium catalyst.

3. A process according to claim 1, wherein the reaction is conducted in the presence of an organic solvent.

4. A process according to claim 1, wherein n is an integer of from 1 to 5 and R is an alkyl group of from 3 to 8 carbon atoms.

5. A process according to claim 4, wherein n is an integer of 2 and R is a butyl group.

6. A process according to claim 1, wherein the palladium catalyst is employed in an amount of from about 0.008 to about 2 mol% per mol of bromobenzene reactant.

7. A process according to claim 6, wherein the palladium catalyst is employed in an amount of from about 0.01 to about 0.02 mol% per mol of bromobenzene reactant.

8. A process according to claim 1 wherein the phase-transfer catalyst is employed in an amount of from about 0.05 to about 5.0 equivalents per mol of bromobenzene reactant.

9. A process according to claim 8, wherein the phase-transfer catalyst is employed in an amount of from about 0.1 to about 1.0 equivalent per mol of bromobenzene reactant.

10. A process according to claim 9, wherein the phase-transfer catalyst is employed in an amount of about 0.1 equivalent per mol of bromobenzene reactant.

11. A process according to claim 1, wherein the palladium catalyst is selected from the group consisting of $Pd(OAc)_2$, $Pd(Cl)_2$, $Pd(PPh_3)_4$, $(PdCl_2(PhCN)_2)$, $Pd(dba)_2$, and Pd on carbon.

12. A process according to claim 11, wherein the phase-transfer catalyst is a tetraalkylammonium salt.

13. A process according to claim 2 wherein the palladium catalyst is selected from the group consisting of $Pd(OAc)_2$, $Pd(Cl)_2$, $Pd(PPh_3)_4$, $(PdCl_2(PhCN)_2)$, $Pd(dba)_2$ and Pd on carbon.

14. A process according to claim 13, wherein the phase-transfer catalyst is a tetraalkylammonium salt, and the bromobenzene reactant is 1-bromo-3,4-difluorobenzene.

15. A process according to claim 1, wherein the bromobenzene reactant is 1-bromo-3,4-difluorobenzene, the alkyl acrylate reactant is butyl acrylate, the palladium catalyst is $Pd(OAc)_2$, the phase-transfer catalyst is tetrabutylammonium bromide, the base is triethylamine, the reaction is conducted at a temperature in the range of from about 130°C to about 140°C, the palladium catalyst is employed in an amount of from about 0.01 mol% to about 0.5 mol% per mole of bromobenzene reactant; the phase-transfer catalyst is employed in an amount of from about 0.1 to about 1 equivalent per mole of bromobenzene reactant, and the butyl acrylate reactant is employed in an amount of from about 1.0 to about 1.05 equivalent per mole of bromobenzene reactant.

16. A process according to claim 1 wherein the yield of alkyl cinnamate ester is >94%.

17. A process according to claim 1, wherein the palladium catalyst is a phosphane-free palladium catalyst and the palladium catalyst is employed in an amount of from about 0.008 to about 5 moles per mole of bromobenzene reactant, and the phase-transfer catalyst is employed in an amount of from about .05 to about 5 equivalents per mole of bromobenzene reactant.

18. A process according to claim 17, wherein n is an integer of from 1 to 5 and

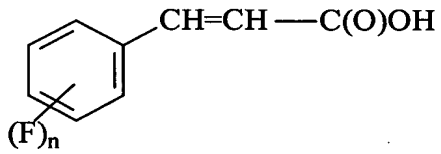
R is an alkyl group of from 3 to 8 carbon atoms.

19. A process according to claim 18, wherein the reaction is conducted in the presence of an organic solvent.

20. A process according to claim 19, wherein the bromobenzene reactant is 1-bromo-3,4-difluorobenzene, the alkyl acrylate reactant is butyl acrylate, the palladium catalyst is $Pd(OAc)_2$, the phase-transfer catalyst is tetrabutylammonium bromide, the base is triethylamine, the reaction is conducted at a temperature in the range of from about 130°C to about 140°C, the palladium catalyst is employed in an amount of from about 0.0051 mol% to about 0.03 mol% per mole of bromobenzene reactant; the phase-transfer catalyst is employed in an amount of from about 0.1 to about 1 equivalent per mole of bromobenzene reactant, and the butyl acrylate reactant is employed in an amount of from 1.0 to about 1.10 equivalent per mole of bromobenzene reactant.

21. A process according to claim 20, wherein the yield of alkyl cinnamate ester is >94%.

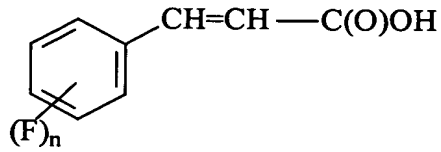
22. A process according to claim 1, further comprising hydrolyzing the alkyl cinnamate compound under basic or acidic conditions to produce a cinnamic acid of the formula:



wherein n is an integer of from 0 to 5.

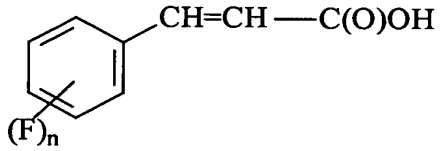
23. A process according to claim 2, further comprising hydrolyzing the alkyl cinnamate compound under basic or acidic conditions to produce a

cinnamic acid of the formula:



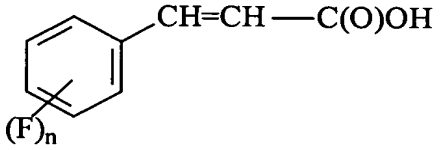
wherein n is an integer of from 0 to 5.

24. A process according to claim 3, further comprising hydrolyzing the alkyl cinnamate compound under basic or acidic conditions to produce a cinnamic acid of the formula:



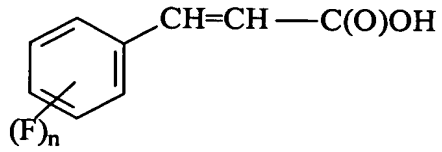
wherein n is an integer of from 0 to 5.

25. A process according to claim 4, further comprising hydrolyzing the alkyl cinnamate compound under basic or acidic conditions to produce a cinnamic acid of the formula:



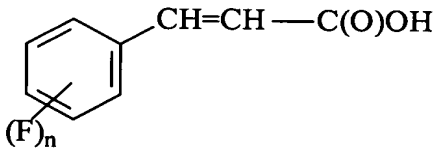
wherein n is an integer of from 1 to 5.

26. A process according to claim 6, further comprising hydrolyzing the alkyl cinnamate compound under basic or acidic conditions to produce a cinnamic acid of the formula:



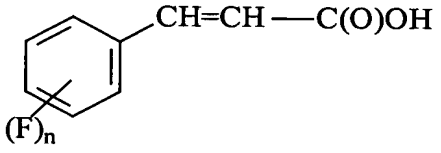
wherein n is an integer of from 0 to 5.

27. A process according to claim 8, further comprising hydrolyzing the alkyl cinnamate compound under basic or acidic conditions to produce a cinnamic acid of the formula:



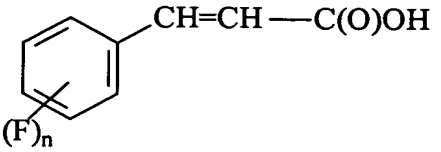
wherein n is an integer of from 0 to 5.

28. A process according to claim 11, further comprising hydrolyzing the alkyl cinnamate compound under basic or acidic conditions to produce a cinnamic acid of the formula:



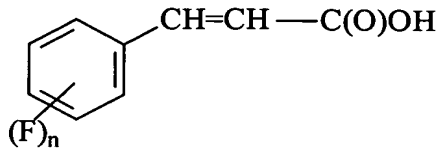
wherein n is an integer of from 0 to 5.

29. A process according to claim 15, further comprising hydrolyzing the alkyl cinnamate compound under basic or acidic conditions to produce a cinnamic acid of the formula:



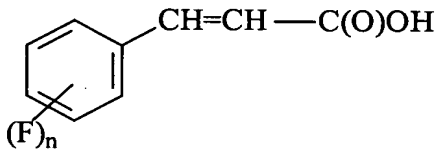
wherein n is the integer of 2.

30. A process according to claim 17, further comprising hydrolyzing the alkyl cinnamate compound under basic or acidic conditions to produce a cinnamic acid of the formula:



wherein n is an integer of from 0 to 5.

31. A process according to claim 20, further comprising hydrolyzing the alkyl cinnamate compound under basic or acidic conditions to produce a cinnamic acid of the formula:



wherein n is the integer 2.

32. A process according to claim 31, wherein the yield of cinnamic acid is about 90% or more.